OPERATING MANUAL

MODELS
4501-4516-4517
5301-5302

56033
COACH INFORMATION NETWORK
www.coachinfo.com

TO THE OPERATOR

The primary purpose of this booklet is to acquaint you with the important operating features of this coach. This manual will not attempt to teach you driving skill, rules of the road, or safety practices. Such phases of coach operation have already been acquired by you.

The knowledge of all of the driving and operating features of this coach, and the practicing of the recommended procedures in this book will add to your skill as an operator. In addition, such knowledge will provide your passengers with greater comfort and safety.

Some of the items discussed may or may not be your direct responsibility, depending upon the regulations of your operating company. Regardless of the responsibility, you as the operator should study this booklet to obtain the best operating efficiency.

DRIVING CONTROLS

All controls, gauges, and switches used to normally drive the coach and to control lights, heating, and air conditioning are arranged in what is generally termed as the "Operator's Compartment." All of these controls are readily accessible to the operator while he is in the driver's seat. Any controls which the operator may have occasion to use under other than normal conditions are explained throughout the manual.

The purpose and location of the important *driving* controls are discussed on the next few pages. Study these and know their purpose and function. The balance of the manual describes step by step operations necessary to successfully operate the coach.

First—Know your controls

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GMC TRUCK & COACH DIVISION

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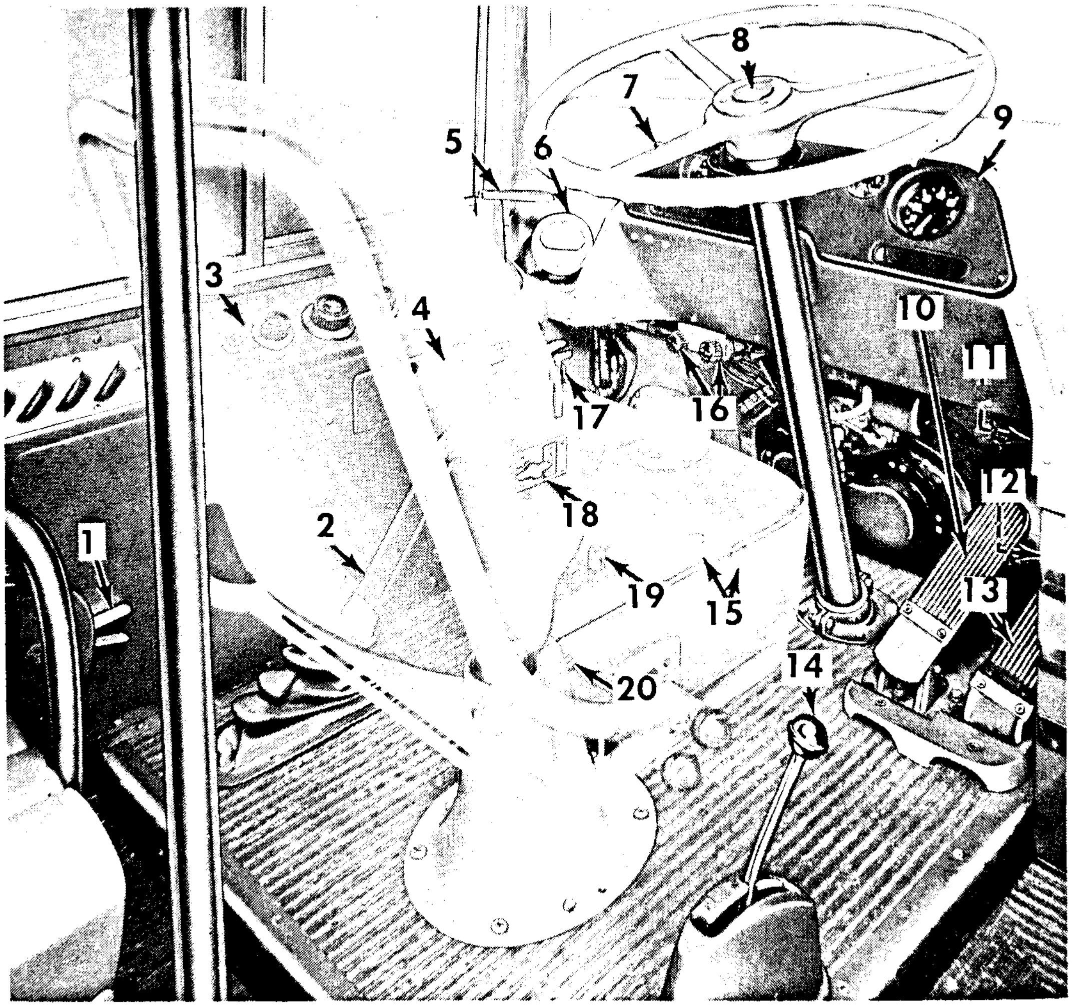
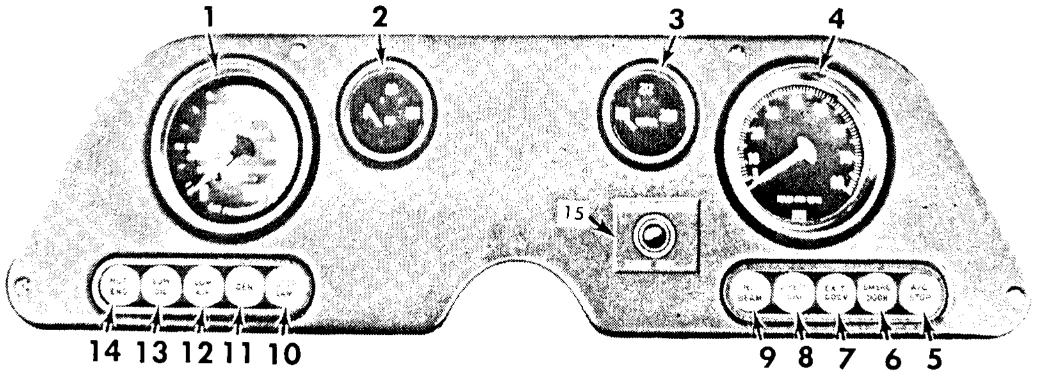
THE OPERATOR'S COMPARTMENT



Typical Operator's Compartment and Driving Controls (TDH Model Shown)

Item	**Name**	**See Page**
1	Operator's Heat and Cooling Control	22
2	Hand Brake Lever	19
3	Driver's Control Panel	3
4	Tip-down Switch Panel	3
5	Door Control Lever	8
6	Tachometer (Special)	
7	Directional Signal Switch Lever	22
8	Horn Button	
9	Gauge and Tell-tale Panel	2
10	Service Brake Treadle	19
11	Driver's Heat Control Rod	23
12	Defroster Heater Temperature Control	12
13	Accelerator Pedal	
14	Transmission Shift Lever	17
15	Directional Signal Foot-operated Switches (Special)	22
16	Windshield Wiper Controls	12
17	Exterior Compartment Lock Key	29
18	Door Control Air Shut-off	8
19	Head Lamp Dimmer Switch	20
20	Windshield Washer Control (Special)	12

GAUGE AND TELL-TALE PANEL

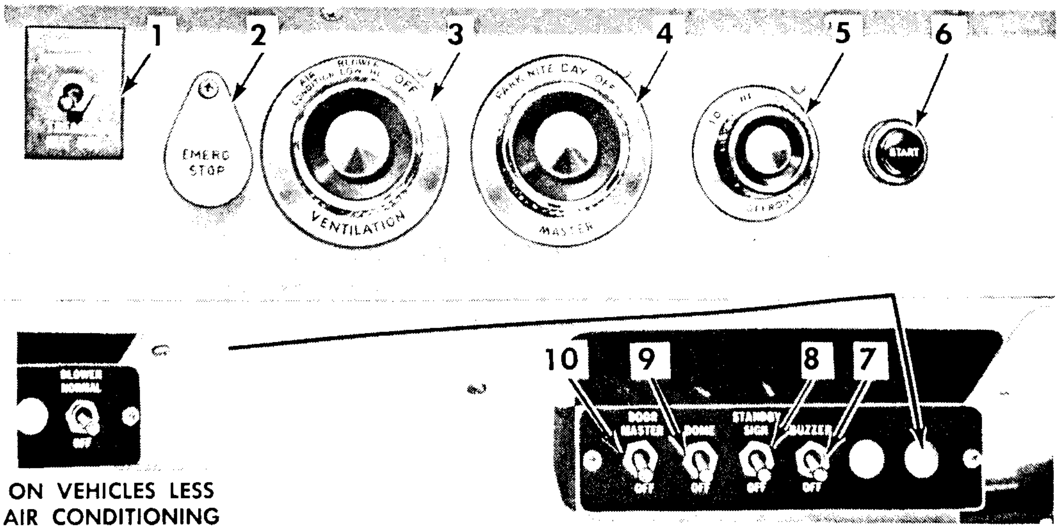


The Gauge and Tell-tale
Panel is Directly in Front of Operator
(TDM Model Shown)

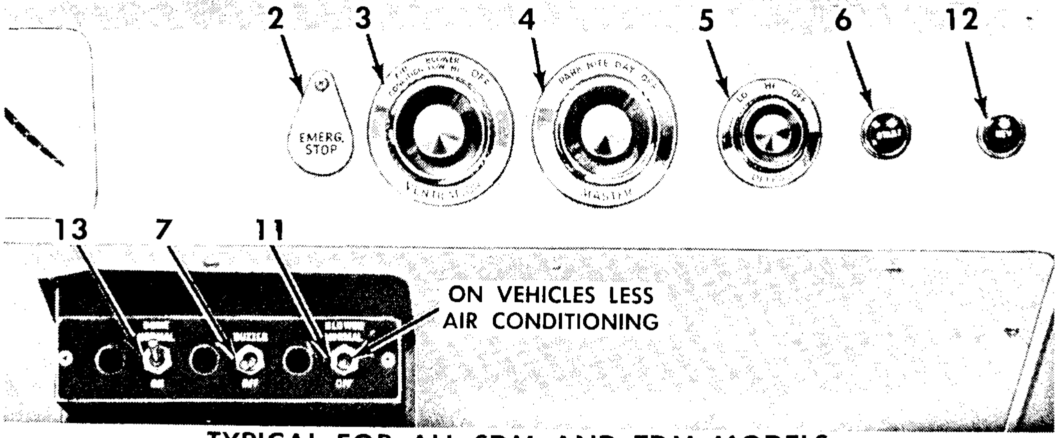
Item	Name	Use	See page
1	"AIR PRESSURE" Gauge	Indicates air pressure in system	14
2	"OIL" Gauge	Indicates engine oil pressure	15
3	"WATER" Gauge	Indicates temperature of engine cooling system	15
4	Speedometer	Indicates vehicle miles per hour	
5	"A/C STOP" Tell-tale	Indicates air conditioning system not operating	23
6	"EMERG DOOR" Tell-tale	Lights when emergency door is unlatched	11
7	"EXIT DOOR" Tell-tale	Indicates rear exit door on transit models is unlocked or open	10
8	"DIRECT SIG" Tell-tale	Flashes on and off when directional signals are operating	22
9	"HI BEAM" Tell-tale	Lights when headlight high beam is used.	20
10	"STOP LAMP" Tell-tale	Lights when service brakes are applied	19
11	"GEN" Tell-tale	Indicates generator not charging	15
12	"LOW AIR" Tell-tale	Lights when air pressure is low	14
13	"LOW OIL" Tell-tale	Lights when engine oil pressure is low	15
14	"HOT ENG" Tell-tale	Lights when engine cooling system temperature is high	15
15	"TRANSMISSION LOW OIL" Tell-tale	Lights when transmission oil pressure is low	16

The
lettering on
the tell-tale windows
is visible only when the
light under the tell-tale is illuminated

THE CONTROL PANEL



TYPICAL FOR SDH AND TDH MODELS

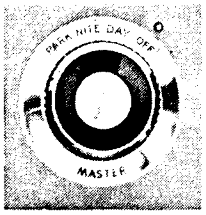


TYPICAL FOR ALL SDM AND TDM MODELS

Item	Name	Use	See page
1	"TREADLE CUT-OUT" Switch	To cause rear doors to close in event passenger is standing on treadle accidently	9
2	"EMERG. STOP" Switch	To stop engine, in event engine fails to stop when "MASTER" control switch is placed in "OFF" position	16
3	"VENTILATION" Switch	To operate heating and cooling systems	23
4	"MASTER" Switch	To control engine and various lights, etc., under selected "DAY," "NITE," and "PARK" position	4
5	"DEFROST" Switch	Controls defroster heater fan	12
6	"START" Switch	To start engine	13
7	"BUZZER" Switch	Controls passenger signals	
8	"STANDBY SIGN" Switch	Controls destination sign standby lights	20
9	"DOME" Switch	Controls dome lights (transit models)	20
10	"DOOR MASTER" Switch	To control door operation	8
11	"BLOWER" Switch	Controls heater blower motors (less A/C)	22
12	"REV" Switch	To select transmission reverse position	18
13	"DOME" Switch	Controls dome and reading lights (suburban models)	21

MASTER CONTROL SWITCH

Coach "MASTER" control switch is located on control panel at left of operator. Switch is marked "MASTER"—with circuit positions marked "OFF," "DAY," "NITE," and "PARK." Selected circuits become energized when circuit caption on switch is rotated into alignment with position indicator button on control panel.

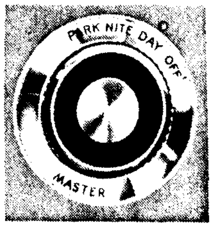


"OFF" Position

No circuits are energized

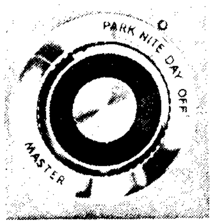
"DAY" Position

A. Engine controls and alarm systems
B. Generator controls
C. Starting controls
D. Door controls (Transit models only)
E. Stop lamp and direction signal controls
F. Speedometer controls
G. Emergency door alarm system
H. Heating system (when engine is running)
J. Air conditioning (special) (when engine is running)—controlled by separate switch
K. Transmission reverse control (SDM and TDM models only)



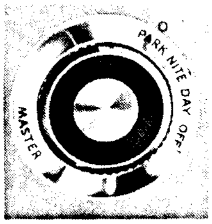
"NITE" Position

A. All circuits shown on "DAY" position
B. Marker lamps
C. Tail lamps
D. License plate lamps
E. Rear step lamp
F. Front step lamp, operated thru door switch
G. Dome and destination sign lamps
H. Head lamps
J. Fog lamps (special)
K. Spot lamp (special)
L. Red lamp over emergency door (special)
M. Destination sign standby lamps
N. Reading lamps



"PARK" Position

A. Marker lamps
B. Tail lamps
C. License plate lamp
D. Front and rear step lamps
E. Destination sign—standby lighting
F. Driver's or fare box lamp, or both



OPERATING ALARM SYSTEMS

Most coaches are equipped with alarm systems which instantly signal various abnormal conditions by means of tell-tale lights and buzzer. The tell-tale lights, mounted at bottom of instrument panel, illuminate and display name of condition when condition occurs. In some cases, when one of the lights illuminate, an alarm buzzer sounds. Detailed information on alarm systems as well as necessary actions to take, are outlined in applicable sections of this publication as follows:

ENGINE ALARM—Tell-tales "LOW OIL" and "HOT ENG" with buzzer. Refer to page 15.

GENERATOR ALARM—Tell-tale "GEN" which indicates generator not charging. Refer to page 15.

AIR CONDITIONING ALARM—Tell-tale "A/C STOP." Refer to page 23.

AIR PRESSURE ALARM—Tell-tale "LOW AIR" and buzzer. Refer to page 14.

EMERGENCY DOOR ALARM – Tell-tale "EMER. DOOR" and on some vehicles a buzzer. Refer to page 11.

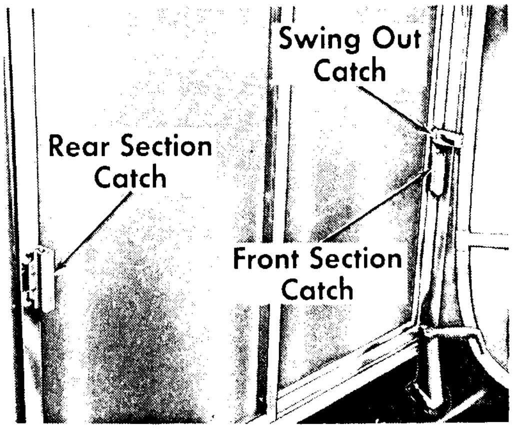
MECHANICAL TRANSMISSION ALARM – Tell-tale low oil pressure. Refer to page 16.

Other telltales are not considered a part of the operating alarm system but indicate normal operation of units or systems. These tell-tales are: "HI-BEAM," "DIRECT SIG.", "EXIT DOOR," and "STOP LAMP."

FOR THE OPERATOR

Operator's Window

The forward half and rearward half of operator's window can be moved to center of window as desired for signaling and ventilation. Each window half is retained in closed position by a latch. Front window half on some coaches will swing outward for additional ventilation.

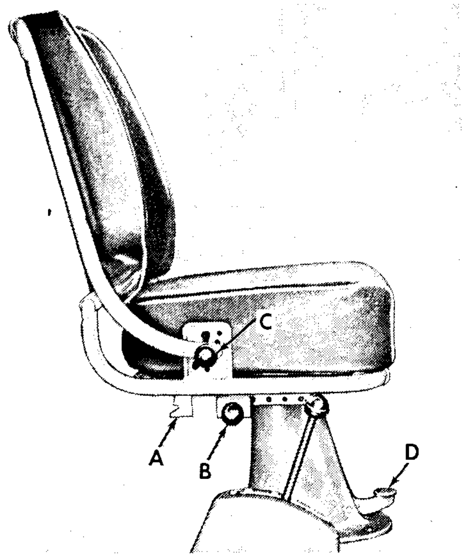


For Your Convenience

FOR THE OPERATOR

Operator's Seat

Operator's seat can be adjusted for height, fore and aft, and seat back can be tilted to desired pitch. These adjustments are readily manipulated to fit operator's comfort.



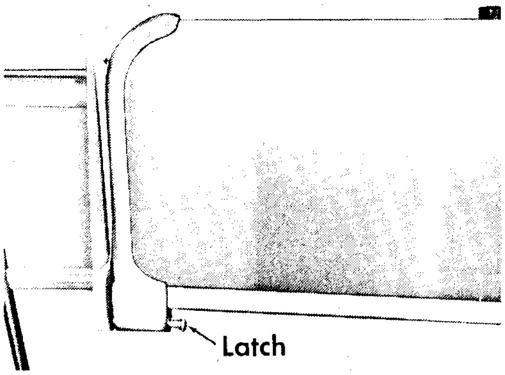
Adjust Seat for Your Comfort

A. Seat Tilt Adjustment – All the operator needs to do is raise the rear edge of the cushion to the desired position with one hand and release. Tilting the seat cushion up and beyond the adjustment range will pivot the seat stops and then allow the seat to be returned to the low tilt angle.

B. Fore and Aft Adjustments —Has five positions, front to rear with 4 inch range. Pull out knob, slide seat to desired position, line up hole, then release knob to engage locking pin.

C. Back Pitch—Adjustable to five positions with a total range of 15. Pull out knob, shift the back of the seat to desired angle, line up hole, then release knob to engage locking pin.

D. Height Adjustment—Adjustable to four positions with total range of 3 inches. Adjustment is controlled by a foot pedal located to front of seat pedestal. The entire seat must be raised to desired position and locking pawl will hold it at this height. To lower the seat, the foot pedal is pressed and seat also raised to disengage the pawl. This safety device will insure against accidental dropping of seat if pedal is touched accidentally with foot.



Right Sun Visor

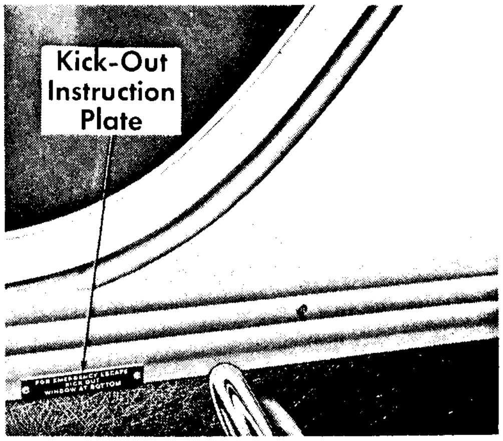
Windshield Sun Visors

The windshield left sun visor can be positioned manually by operator. The right sun visor is equipped with a spring-loaded latch at the left side as shown in illustration. Pull latch button to right, then position visor. When latch button is released, visor is locked in position.

FOR THE OPERATOR

Side Window Emergency Escape

In emergency, entire side window sash can be opened for escape. Windows are hinged at top and can be opened by kicking out at the bottom. Some coaches are equipped with passenger instruction decal reading "For Emergency Escape Kick Out Window At Bottom" at base of each window.



Emergency Escape

OPERATION OF DOORS

The operator must have a knowledge of the purposes and functions of the various door controls before he can successfully and safely operate the doors. Reference to rear doors applies to transit models only. The following explanations describe the purposes and functions of individual controls.

Front Doors (Transit and Suburban Coaches)

The front or entrance doors are air-operated. Doors are opened and closed by manually positioning control lever mounted to left of driver.

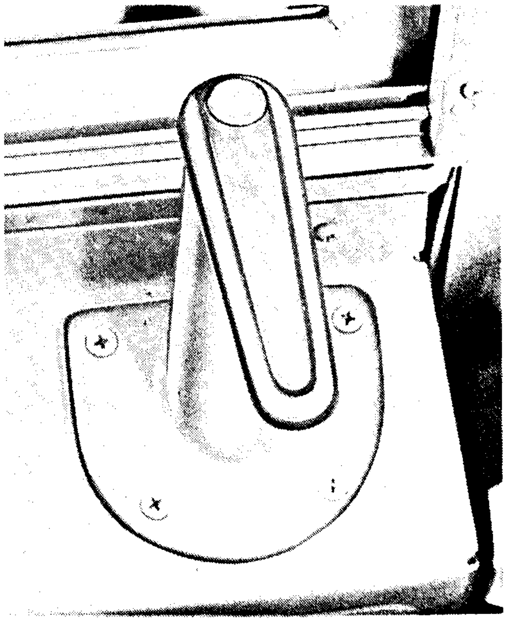
Rear Doors (Transit coaches only)

(Electrically controlled – Air-operated doors)

To operate door controls of this type, place door control lever to door open or closed position. If doors are equipped with treadles, passenger stepping on same will cause doors to open, providing control lever is in door open position.

(Push-type doors)

Doors are manually opened by passenger pushing on doors after doors are unlocked by positioning door control lever in any rear door unlocked position. On all vehicles a light above door indicates doors are unlocked.



Door Control Lever

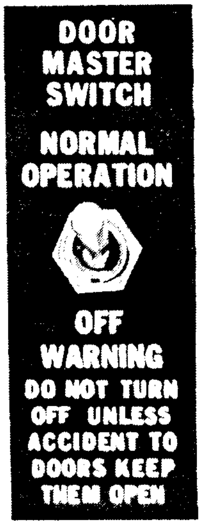
OPERATION OF DOORS (Cont.)

Door Control Valve

The door control valve lever, which is manually positioned by the operator, is located to the left of the operator. This valve normally has five lever operating positions, but may have special arrangement of and number of positions.

Door Control Lever Positions

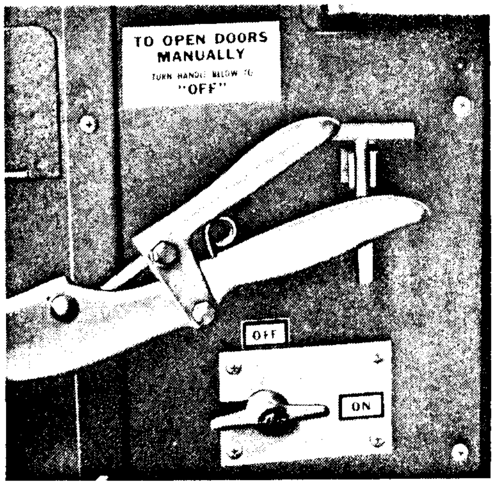
Lever Position	Front Doors	Air-Operated Rear Doors	Push-Type Rear Doors
Extreme forward	Open	Open	Unlocked
1st position forward	Open	Closed	Closed and locked
Center position	Closed	Closed	Closed and locked
1st position rearward	Closed	Open	Unlocked
Extreme rearward	Open	Open	Unlocked



Door Master Switch

Door Master Switch (Transit Coaches Only)

On some coaches, door master switch is located on tip-down switch panel at left of driver. On other coaches, switch is mounted behind front destination sign cover. Switch must be set in position ("DOOR MASTER" —standard) or "NORMAL OPERATION"— special) to operate door mechanism. Under some emergency conditions, as explained later, switch can be turned to "OFF" position.



Air Shut-off Valve

Air Shut-off Valve

Air shut-off valve, located at left of operator, controls air pressure to all air-operated doors. Instruction decal "To Open Doors Manually, Turn Handle Below to Off" is located on trim panel below control lever. The valve lever must be positioned to "ON" to operate air-operated door mechanism. Under some emergency conditions, as explained later, valve can be turned to "OFF."

OPERATION OF DOORS (Cont.)

Brake Interlock (When Used)

The brake interlock is used in conjunction with rear door operation. Whenever the rear doors are open (air-operated doors) or unlocked (push-type doors), partial air pressure is applied to rear brakes. Brakes remain applied as long as the rear doors are open or unlocked. When brake interlock functions, the tell-tale "STOP LAMP" lights. Brakes are released when rear doors are closed or locked.

CAUTION: Do not attempt to open doors or pre-set the control lever to open doors when coach is in motion. This practice is dangerous.

Accelerator Interlock (When Used)

The accelerator interlock, connected to accelerator linkage, prevents engine from exceeding idling speed whenever the rear doors are open (air-operated door) or unlocked (push-type doors). Whenever rear doors are closed or locked, control of accelerator is returned to operator.

Door Sensitive Edges (When Used)

Sensitive edges, connected to rear doors, are used on vehicles having electrically controlled air-operated doors.

If the doors, during closing, touch any obstruction, the doors will reopen completely. If the obstruction is removed, the doors will close. If the obstruction is not removed the doors will cycle by closing to point of contacting obstruction and then reopen until the operator positions the door control valve to retain doors open.

After the doors are completely closed, a warning bell will sound if an object is forced between the door edges. This action, however, will not open the doors.

Treadles (When Used)

Treadles may be used at rear doors on some coaches. The operator must pre-set the door control lever to opening position. The weight of the passenger will then open the doors. After weight of the passenger is removed, the doors will close. The operator must, however, position the door control lever to closed position before coach can be moved.

A "Treadle Cut-Out" switch on control panel (item 1, page 3) may be used on some coaches having treadles. Switch may be used so that doors can be closed in case treadle is depressed for any reason.

A "Rear Door Switch" located on front destination sign door may be used on some coaches to open the doors regardless of treadle or door control lever position.

Rear Door Switch

OPERATION OF DOORS (Cont.)

General Door Operation

The following procedures are general and as a rule can be used on all coaches. Reference to rear doors applies to transit models only.

CAUTION: Do not attempt to move door control lever to any door open or unlocked position while coach is moving.

The operator must know which automatic devices are used on his coach before he can successfully and safely operate the doors.

FRONT DOORS OPEN—REAR DOORS CLOSED

Move control lever to 1st position forward. Entrance doors will then open. To close doors, return lever to center position.

REAR DOORS OPEN—FRONT DOORS CLOSED (Air-Operated Rear Doors)

Move control lever to 1st position rearward. If equipped with treadles, the operator pre-sets the lever to 1st position rearward. The weight of passenger on treadle will open the doors. When weight is removed, the doors will close; however, the door control lever must be placed in closed position to hold doors closed, and before coach can be moved.

If equipped with rear door special switch located on front destination sign door above driver, rear doors can be opened regardless of other control units. This switch is for emergency use only.

When rear doors are open, the tell-tale "EXIT DOOR" will also light. If brake interlock is used, the tell-tale "STOP LAMP" will also light.

REAR DOORS UNLOCKED—FRONT DOORS CLOSED (Push-Type Rear Doors)

Move control lever to 1st position rearward. In this position, the rear doors become unlocked and passenger can push doors open. Rear brakes will be partially applied, and the tell-tales "STOP LAMP" and "EXIT DOOR" will light.

REAR DOORS UNLOCKED—FRONT DOORS OPEN (Push-Type Rear Doors)

Move control lever to extreme forward or rearward position. Front doors will open, and rear doors will unlock. Alighting passenger can push rear doors open. Rear brakes will be applied, and the tell-tales "STOP LAMP" and "EXIT DOOR" will light.

Emergency Measures

Following instructions on the emergency use of the air shut-off valve and door master switch must be considered as only emergency measures. Such procedures are not to be used for the normal operation of doors. Under no condition should the coach be operated, except to a point of safety, with the air shut-off valve and door master switch in "OFF" position.

OPERATION OF DOORS (Cont.)

Emergency Measures (Cont.)

FRONT DOORS FAIL TO OPEN OR CLOSE

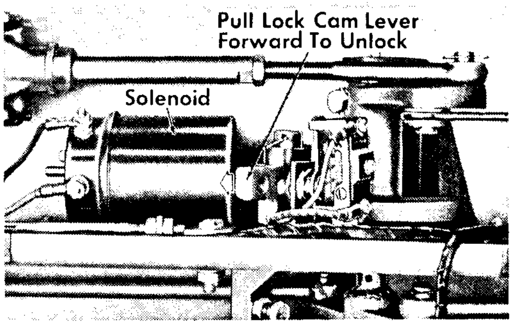
Turn air shut-off valve to "OFF" position. Doors can then be forced open and closed manually. Return shut-off valve to "ON" position before proceeding.

REAR DOORS FAIL TO OPEN OR CLOSE (Air-Operated Rear Doors)

Turn door master switch to "OFF" position. If doors fail to open or close, turn air shut-off valve to "OFF" position; then manually force doors open or closed. Return air shut-off valve and door master switch to "ON" position.

REAR DOORS FAIL TO UNLOCK (Push-Type Rear Doors)

Door master switch must be in ("DOOR MASTER" – Standard) or "NORMAL OPERATION" – Special) position. If doors fail to unlock, lower the rear door compartment door and move lock cam lever forward. Doors can then be pushed open. Check for loose wiring connections at lock solenoid.



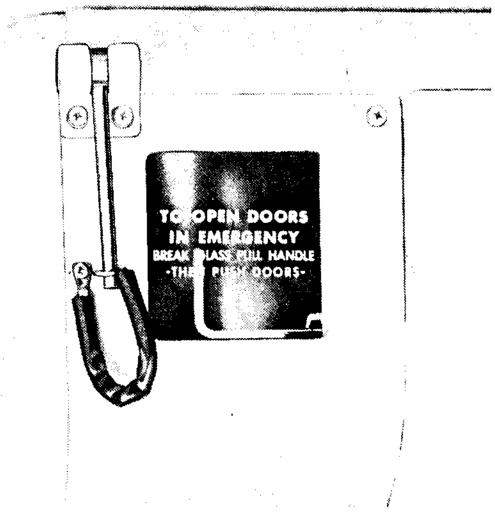
Location of Lock Cam Lever

Rear Door Emergency Release (Push-type Doors)

Some coaches are equipped with emergency release mechanism mounted behind glass at front of door compartment. Break glass with small hammer chained to compartment, then pull handle to unlock doors. Push doors open.

FAILURE OF SAFETY DEVICES

Turn door master switch to "OFF" position. Return to "NORMAL OPERATION" or "DOOR MASTER" position after correcting cause of failure.



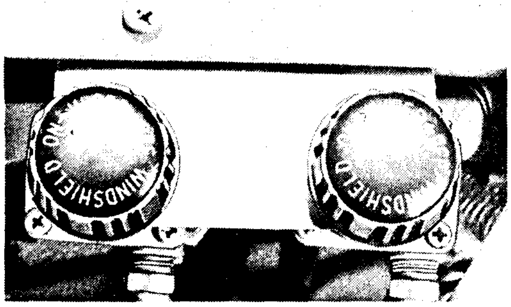
Rear Door Emergency Release (Push-Type Doors)

Emergency Door

The emergency door on left side of coach is held securely with a latch. Latch must be pressed outward and then lifted up to release door. Whenever latch is not secure or has been lifted up, the tell-tale "EMERG. DOOR" will light and the buzzer will sound.

WINDSHIELD WIPERS

Two windshield wiper control knobs are mounted on left dash panel in front of driver. Left knob controls wiper on left half of windshield, while right knob operates right wiper.

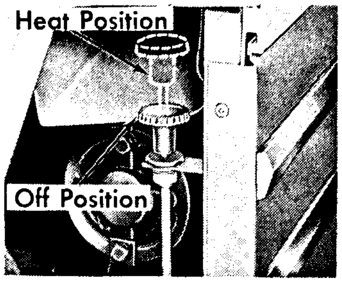


To operate either wiper, turn knob toward "ON" position to degree of blade speed desired. To stop wiper, turn knob to "OFF." If blade is not positioned as desired, give knob ¼ turn toward "ON," then back to "OFF." If wipers fail to operate properly, report condition.

WINDSHIELD DEFROSTER

Defroster Fan

Windshield defroster fan is controlled by a three-position switch (5, page 3) marked "DEFROST" on control panel at left of operator. Fan is stopped with switch in "OFF" position. With switch turned to "HI," defroster fan will operate at high speed. With switch turned to "LO," fan will operate at low speed. Air is directed over surface of windshield through a continuous opening in ledge.



Defroster Temperature Control

Temperature of defrosting air can be regulated by defroster heater temperature control (12, page 1) located behind dash panel at right of operator. The control meters the flow of water through the defroster heater core. Control knob can be pulled up to increase heat, or pushed down to shut off heat.

NOTE: Excessive use of defroster heater will cause high temperature at the front end of coach, thereby satisfying the thermostat and leaving the balance of the coach cold.

WINDSHIELD WASHERS

Windshield washers as used on some coaches, are operated by pressing down on washer control unit (20, page 1) located on floor at left of operator. Water is directed onto windshield each time washer control unit is pressed downward. Water supply reservoir is located in compartment at right of dash. Supply in reservoir should be checked each day.

ENGINE OPERATION

Controls necessary to start and stop engine from the operator's compartment are mounted on the control panel at left of driver. These controls are:

"MASTER" control switch (item 4, page 3). This switch must be placed in "DAY" position when starting and operating engine. Placing switch in "OFF" position stops engine.

"START" switch (item 6, page 3). This switch is a "momentary-on" type switch, and the switch button must be held inward to engage the starter. When button is released, the switch returns to "OFF" position. On some coaches a "key-operated lock" switch mounted on control panel at left of operator must be turned on before "START" button is pressed in.

"EMERG. STOP" switch (item 2, page 3). This is a "momentary-on" type switch used to stop the engine in the event it fails to stop when "MASTER" control switch is turned to "OFF" position. Hinged guard over switch must be swung to one side to use switch. The switch button must be pressed in to activate the emergency stop mechanism. When button is released, switch returns to "OFF" position. Use of switch and resetting engine stop mechanism are explained on page 16.

GAUGES AND TELL-TALE LIGHTS (page 2). Oil pressure and temperature gauges (when used), together with "LOW OIL" and "HOT ENG." tell-tale lights, are located in gauge panel in front of operator. A buzzer sounds when either of the two tell-tales are illuminated.

STARTING THE ENGINE

1. Place hand brake lever in fully applied position.
2. Transmission shift lever must be in neutral.
3. Place "MASTER" control switch in "DAY" position only. This will lessen load on batteries when starting engine at night. After turning switch to "DAY" position on coaches equipped with automatic shut-off system, engine must be started before safety control relay system can act. In addition to "MASTER" control switch on some coaches, a key-operated lock switch on panel at left of operator must also be turned on.

NOTE: When "MASTER" control switch is placed in "DAY" or "NITE" position, "LOW OIL" tell-tale will light and buzzer will sound. "LOW AIR" tell-tale will light if air pressure is below 55-60 pounds and on vehicles having mechanical transmission, the "TRANSMISSION LOW OIL" tell-tale will light. Lights will remain illuminated and buzzer will continue to sound after the engine has started until oil pressure is over 3 pounds and air pressure is above 55-60 pounds.

4. Press "START" switch button to engage starter. Release switch button the instant the engine starts.

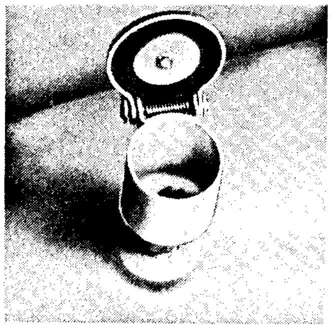
CAUTION: Do not engage starter longer than 15 seconds continuously. If engine does not start at the first try, wait 10 to 15 seconds before second attempt. On coaches equipped with automatic shut-off sysem, "MASTER" control switch must be returned to "OFF" position during waiting period to prevent action of the safety control relay.

5. Refer to "EMERGENCY CONDITIONS" on page 30 for instructions regarding starting engine at rear of coach.

STARTING THE ENGINE (Cont.)

Cold Weather Starting

Some coaches are equipped with a cold weather starting fluid cup. When temperature is below 35°F., it may be necessary to use a starting fluid. This practice should be avoided unless absolutely necessary. If necessary to use starting fluid, use one 7 cc. capsule during above-zero temperature, or two 7 cc. capsules if temperature is below zero.



Starting Fluid Cup

To use the capsule, raise the cover of the small cup on the blower intake manifold and force the capsule down onto the pointed tube in the cup. Squeeze the capsule dry, remove from cup and discard, and allow the spring-loaded cover to shut tightly. Start engine by the usual method.

FIRE WARNING

Starting fluid used in capsules is inflammable, toxic and possesses anesthetic properties. Starting capsules should be stored in accordance with local fire regulations. Keep capsules away from open fire. NO SMOKING while using starting fluid capsules to start engine.

DURING OPERATION

Warm-Up

After a cold engine has started, increase speed to a fast idle (approximately one-third throttle) for warm-up period. During engine warm-up and during engine operation, observe the gauge panel at frequent intervals. The gauges and tell-tale lights indicate normal and abnormal operation of the engine. The margin of safety in the gauges and tell-tales is enough to warn the operator of trouble before any serious damage occurs.

Air Pressure

The air pressure on these vehicles is very important. Besides the brake and air suspension system, other systems of the vehicle depend upon air pressure for their operation.

During warm-up, the "LOW AIR" tell-tale will light and buzzer will sound until air pressure is built up to 55-60 pounds. Do not move coach until air pressure is at least 80 pounds to assure safe braking. Do not use over one-third throttle to build up air pressure.

If during operation the tell-tale "LOW AIR" lights and buzzer sounds, indicating low air pressure, stop the coach as quickly as possible and determine and correct cause before proceeding.

DURING OPERATION (Cont.)

Engine Oil Pressure

Engine oil pressure gauge (when used) is mounted on gauge panel in front of operator (page 2). Normal readings with engine hot are: Idling—4 pounds minimum; Governed speed—25 pounds minimum. Engine must not be operated when oil pressure falls below 25 pounds at governed speed under full load. If oil pressure falls below 3 pounds, the "LOW OIL" tell-tale will light and buzzer will sound. If coach is equipped with automatic shut-off, the safety control relay will stop the engine. Refer to "Engine Alarm System" below.

Engine Temperature

Engine temperature gauge (when used) is mounted on gauge panel in front of operator (page 2). Efficient operating temperature range is 160°F. to 180°F. (preferably 180°F.) Avoid moving coach, if conditions permit, until temperature is up to 140°F. If engine overheats (212°F.), the "HOT ENG." tell-tale will light and buzzer will sound. If coach is equipped with automatic shut-off, the safety control relay will stop the engine. Refer to "Engine Alarm System" below.

Generator Not Charging

The word "GEN" will light up on generator tell-tale (indicating generator not charging) when the "MASTER" control switch is in "DAY" or "NITE" position and engine is not running or when the generator is not charging and engine is running (normal operation). If the "GEN" light appears during normal operation, undertake action as directed later under "Emergency Conditions," page 30.

ENGINE ALARM SYSTEM

The engine is equipped with an alarm system to signal low oil pressure and high engine temperature. "LOW OIL" and "HOT ENG." tell-tales are located in gauge panel (page 2). In addition, an alarm buzzer sounds when either condition occurs. Some coaches have an automatic shut-off system, operating through a time delay safety control relay, interconnected with the alarm system.

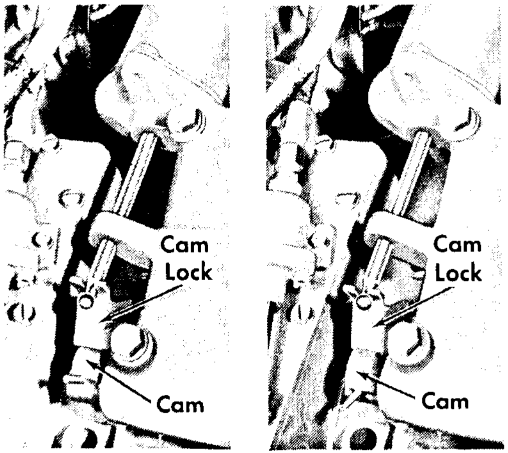
The safety control relay system acts to shut off the engine when one of these abnormal conditions occur. There is, however, a time lag of 15 to 20 seconds after the "LOW OIL" or "HOT ENG." tell-tale comes on and buzzer sounds until the relay system shuts off the engine.

On some coaches, the safety control relay action can be overruled by holding toggle of "ENGINE STOP OVERRULE" switch against tension, permitting further movement of the coach to safety. Switch, which is of "momentary-on" type, is located on control panel at left of operator. Under no condition should the engine be run after point of safety is reached, or restarted until the abnormal condition is corrected. Refer to "Emergency Conditions" on page 30.

STOPPING ENGINE

1. Apply hand brake and place transmission shift lever in neutral.
2. Idle engine for about 30 seconds, then place the "MASTER" control switch in "OFF" position. This will activate the governor shut-off mechanism and stop the engine.

ENGINE EMERGENCY STOP



STOP POSITION RUN POSITION

Emergency Stop Solenoid

The "EMER. STOP" switch (2, page 3) on control panel at left of driver is used only as an emergency measure in the event engine fails to stop when "MASTER" control switch is placed in "OFF" position. The "EMERG. STOP" switch is a "momentary-on" type switch. Guard over switch must be swung to one side to expose switch button. When button is pressed inward, a solenoid releases cam on air choke valve, permitting valve to close, thus shutting off air supply to engine.

Important

When "EMERG. STOP" switch has been used to stop engine, the choke valve must be manually reset at the engine (see illustration). Rotate cam until shoulder of cam engages cam lock.

Caution

Use emergency stop ONLY in emergency. Do not use for normal stopping of engine. Do not restart engine until reason for loss of control has been determined and corrected.

MECHANICAL TRANSMISSION LOW OIL PRESSURE

"TRANSMISSION LOW OIL" tell-tale (15, page 2) mounted at right of gauge panel is used to indicate low transmission oil pressure on coaches equipped with mechanical transmission. If tell-tale comes on during operation, stop coach; low oil level in transmission or a faulty oil pump is indicated. Determine cause and correct before proceeding.

USE OF HYDRAULIC TRANSMISSION

Neutral for parking, and forward and reverse operations are obtained by positioning control lever (14, page 1) located on floor at right of operator.

IMPORTANT: Coach should not be moved when pressure in air system is lower than 80 pounds.

Shift into positions only with engine at slow idling and with vehicle completely stopped.

Avoid gear clashing when shifting. If shift cannot be made without gears grinding, report condition immediately.

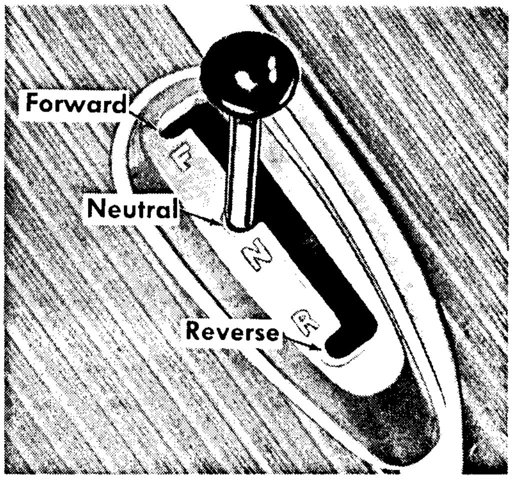
SHIFTING INTO FORWARD

Move lever out of "N" notch, hesitate 2 or 3 seconds, and then raise lever slowly into "F" (forward) position.

SHIFTING INTO REVERSE

NOTE: Operator should be guided by some responsible person stationed at rear of bus.

With vehicle completely stopped, engage "F" as previously described. Push lever into "R" (reverse) without hesitating in "N" (neutral).



Transmission Shift Lever

SHIFTING INTO NEUTRAL

Move control lever out of "F" or "R" notch into "N" (neutral) position without hesitation, with foot removed from accelerator.

UNDERWAY

After placing lever into "F", accelerate engine to move coach. To stop, remove foot from accelerator and apply brakes. It is not necessary to move lever into "N" when making normal traffic stop.

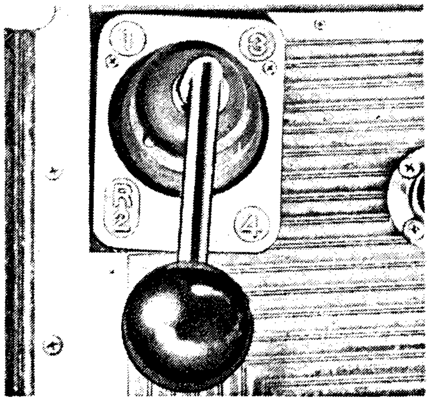
IMPORTANT

Safety demands that control lever be placed into "N" (neutral) notch before driver leaves seat, as coach will move if accelerator pedal is accidentally touched. Always place control lever in "N" before stopping engine and set hand brake effectively.

The transmission is fully automatic. Speed ratio of power converter changes automatically as coach speed increases, and direct-drive goes in and out at predetermined speeds.

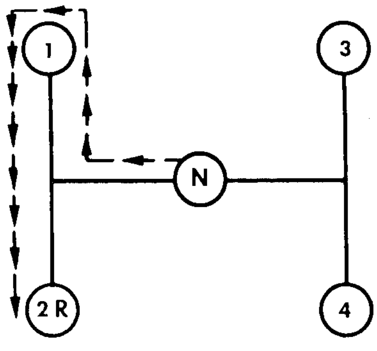
USE OF MECHANICAL TRANSMISSION

Mechanical transmission has four forward speeds and one reverse. Shift is made into the various forward speeds with a conventional shift lever. Reverse gear is obtained by using an electric solenoid in conjunction with the shift lever. Solenoid is controlled by a "REV" (reverse) switch (12, page 3) on switch panel.



FORWARD

Hold "Rev" Switch Button Down



REVERSE

Upshifting

Double-clutching method is recommended when shifting gears. Always start vehicle moving in 1st gear and progressively shift to 2nd, 3rd, and 4th; do not skip gears. Remain in each gear until engine reaches governed speed before shifting into the next higher gear.

Downshifting

Always shift into next lower gear before the engine starts to lug. Use the double-clutching method of shifting. Make use of lower gears going up and down grades, when on *ice,* in *snow,* or in *mud.*

Use the same gear to go down a grade as would be used to go up the same grade. Bear in mind that the Diesel engine is an effective brake in checking vehicle speed when going down a grade. Braking effect of the engine increases with its speed; however, *the maximum engine speed must not exceed its governed speed.*

Reversing

The "MASTER" control switch must be in "DAY" or "NITE" position before "REV" switch will position transmission.

With coach completely stopped, depress clutch pedal and move transmission shift lever from neutral into 1st gear position.

While holding "REV" switch down, move shift lever to reverse position (normally 2nd position). Slowly release clutch and accelerate as necessary.

To shift out of reverse, the coach must be completely stopped. With clutch pedal depressed, move shift lever from reverse to **1st gear position,** and then into neutral. It is not necessary to use the "REV" switch when shifting out of reverse.

USE OF SERVICE BRAKES

Service brakes on these coaches are air-operated and are applied by pressing brake treadle located to the left of accelerator pedal. Varying degrees of brake application are obtained by varying the distance the treadle is depressed.

Bear in mind that the best braking can be obtained by making the initial brake application gradually to extent of brake required. Application pressure should then be reduced gradually as speed is reduced so that at end of stop only a slight pressure remains in the brake chambers.

Do Not "Fan" The Brake Treadle

This practice causes poor brake performance, wastes air pressure, and causes excessive wear on brake operating units and brake lining. "Fanning" does not increase brake line pressure, but decreases both reservoir and line pressure.

When brake treadle is depressed, stop light switch functions to light stop lights providing "MASTER" control switch is in either "DAY" or "NITE" position. Also the tell-tale, marked "STOP LAMP" on instrument panel, will light indicating stop lights are functioning. Failure of tell-tale to illuminate when brakes are applied indicates burnt out bulbs, or a shorted circuit. NOTE: On coaches equipped with brake interlock mechanism, the stop lamp tell-tale will light when exit door is open or unlocked.

Air Pressure Is Important

Air pressure must be at least 80 pounds before air brakes can develop their full effectiveness. The operator should observe the air pressure gauge frequently. If "LOW AIR" tell-tale lights and buzzer sounds during operation, coach should be stopped and cause of air loss determined. Manual pressure on the treadle will not operate the brakes without air pressure.

USE OF HAND BRAKE

Hand brake is applied by hand brake lever at left of operator. Hand brake should always be applied whenever coach is parked. Hand brake should not be used for normal braking; however, it can be used to assist in stopping coach in an emergency.

Important

BE SURE HAND BRAKE IS RELEASED BEFORE MOVING COACH.

USE OF LIGHTS

When necessary to operate coach under conditions where exterior and interior lights are required, the "MASTER" switch on control panel at left of operator must be turned to either the "NITE" or "PARK" position. Lamps which light with switch in either of these two positions are identified on page 4. The destination sign standby lamps, on transit coaches, the dome lamps, and reading lamps on suburban coaches, are controlled by secondary switches interconnected into the master switch circuits. These switches are also located on the switch panel at left of operator (page 3). On transit coaches, dome lamp switch is marked "DOME" and "OFF" and destination sign standby switch is marked "STANDBY SIGN" and "OFF". Operation of affected lights are explained later under "Light Switches."

If necessary to park vehicle safely along street or highway at night with engine not running, place "MASTER" switch to "PARK" position. With switch in this position, the marker lights, tail lamps, license plate lamp, stepwell lamps, fare box, and destination sign standby lamps are lighted.

"DOME" Lamp switch on suburban coaches is marked "NORMAL" and "OFF". On these coaches even with "MASTER" switch in "OFF" position, dome lamps can be lighted by placing "DOME" switch in "ON" position. This same switch is also used to control reading lamp circuits.

Operation of Head Lamps

Head lamp circuit is energized by placing "MASTER" switch to "NITE" position. High or low beams can be selected by a foot-operated dimmer switch (19, page 1) on the floor. When head lamp high beam is selected, the tell-tale "HI-BEAM" on instrument panel is illuminated. The lower beam is generally used on lighted streets or when approaching on-coming traffic.

Light Switches

The majority of exterior and interior lights are controlled by the "MASTER" switch on control panel at left of operator. Location and operation of other switches are explained below:

Transit Coaches

"DOME" switch—a two-position switch (9, page 3), marked "DOME" and "OFF," located on tip-down switch panel at left of operator. Dome lamps will light when switch is placed in "DOME" position regardless of the "MASTER" switch position.

Transit Coaches (Cont.)

NOTE: Dome lamps will also light when the "MASTER" switch is in "NITE" position and both the "STANDBY SIGN" and "DOME" switches are in the "OFF" position.

"STANDBY SIGN" switch—a two-position switch (8, page 3) marked "STANDBY SIGN" and "OFF," located on tip-down switch panel at left of operator. Purpose of switch is to light the destination sign, if desired, while operating coach with the dome lights off. Standby lamps will light when the "MASTER" switch is in "NITE" position and the "STANDBY SIGN" switch is placed in "STANDBY SIGN" position.

NOTE: Destination sign standby lamps will also light whenever "MASTER" switch is placed in the "PARK" position.

Suburban Coaches

"DOME" switch — a two-position switch (13, page 3) marked "DOME"—"NORMAL" and "OFF" is located on panel at left of operator. Switch controls both the dome and reading lamps.

Dome lamps will light under the following conditions:

1. With "MASTER" switch in either "OFF" or "NITE" position and "DOME" switch placed in "ON" position.
2. With "MASTER" switch in "PARK" position and "DOME" switch in either "NORMAL" or "ON" position.

The reading lamp circuit which is also controlled by the "DOME" switch is energized only when "MASTER" switch is in "NITE" position and "DOME" switch is in "NORMAL" position. Whenever reading lamp circuit is energized, individual reading lamps switches can be controlled by the passenger.

Other Lights

Engine Compartment Lights—Engine compartment lights are controlled by a two-position switch marked "COMP'T. LAMPS" on engine compartment control panel.

Stop Lights—Right and left stop lights illuminate whenever brakes are applied. The tell-tale "STOP LAMP" (10, page 2) illuminates, signalling that lights are operating when brakes are applied.

Baggage Compartment Lights (Suburban Models)—Baggage compartment lights are controlled by automatic switches at each compartment door.

USE OF LIGHTS (Cont.)

Other Lights (Cont.)

Directional Signal Switch—On some coaches a directional signal switch handle (7, page 1) is located at right of steering column just under the steering wheel. With switch lever up, the front left turn signal light and the left rear stop light flash on and off for a left turn. With lever down, similar right lights flash to indicate right turn. After making turn, switch handle returns to neutral position. With switch lever either up or down, the tell-tale "DIRECT SIG." (8, page 2) flashes, indicating that lights are operating. When switch handle is located at left of steering column, opposite signals flash. On other coaches, directional signal lights are operated by separate foot-controlled switches (15, page 1). Right switch causes right side signals to operate, whereas left switch causes left side signals to operate. Both switches are of the momentary on type and switch button must be held down for full time of desired operation. When signals are operating, the tell-tale "DIRECT SIG." on panel will light.

HEATING AND AIR CONDITIONING

Heating and air conditioning controls used by operator are mounted on the control panel to the left of operator (page 3).

Heating System Operation

Operation of the heating system is completely automatic when coach engine is running.

"VENTILATION" switch on vehicles having air conditioning need not be positioned to "HI" or "LOW" for heating system to operate, as heater blowers will run at low speed whenever the thermostat calls for heat. However, on these vehicles the switch can be positioned to "HI" or "LOW" as desired to provide ventilation regardless of the demands of thermostat.

On vehicles without air conditioning, "BLOWER" switch located on tip-down switch panel at left of operator (11, page 3), and marked "NORMAL" and "OFF," controls blower motors.

With switch in "NORMAL" position, blower motors operate at low speed. Placing switch to "OFF" stops blower motors. However, if the thermostat calls for heat, blower motors will continue to run regardless of the "BLOWER" switch position.

IMPORTANT

Excessive use of defroster heater at front end may cause high temperature in front of coach, thereby satisfying the thermostat control and leaving the rear area in the coach cold.

HEATING AND AIR CONDITIONING (Cont.)

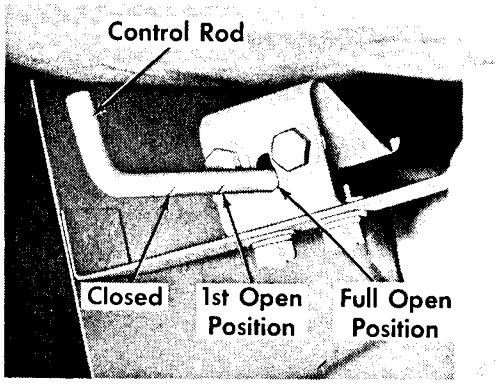
Air Conditioning System Operation

Air conditioning system operates automatically once the coach engine is running and the "VENTILATION" switch on panel at left of operator is placed in "AIR CONDITION" position. With system operating, the blower motors will operate at high speed. If air conditioning system should fail to operate, a tell-tale marked "A/C STOP" will light at right of instrument panel in front of operator. If tell-tale comes on during operation, turn "VENTILATION" switch to "OFF" position and report the condition.

During operation of air conditioning system, keep windows closed and do not leave doors open for excessive periods.

Operator's Heat and Cooling Control

Air flow into operator's compartment is controlled by a manually operated damper (1, page 1) in duct near floor at left of operator. Heat can also be directed towards operator's feet from the defroster heater compartment by opening damper at right of accelerator pedal.



Defroster Damper Control

VENTILATION

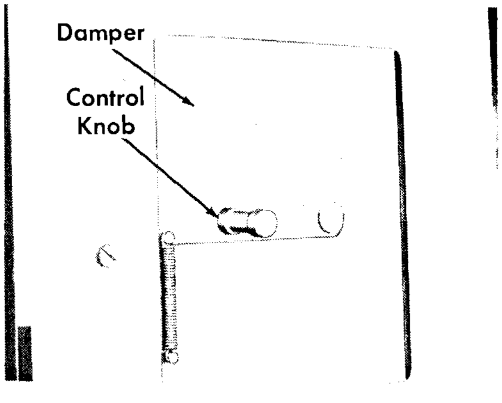
If use of heating or air conditioning system is not required, or if systems are inoperative, ventilation can be obtained in coach in the following manner:

1. Operator's window can be opened as explained on page 5. Front and rear half of each passenger side window can be opened; release catch on front or rear half, then slide window to open.

2. Outside air can be admitted at right front of coach through a screened opening into defroster heater compartment. Lift vent control lever, then swing door inward to open vent.

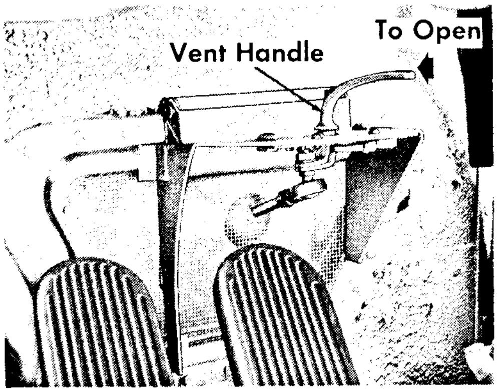
IMPORTANT

Front air intake should be in closed position when air conditioning system is operating.



Right Front Air Intake

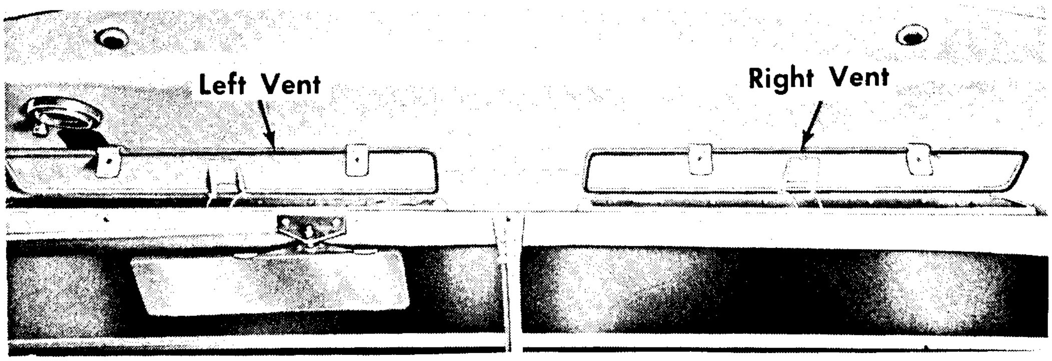
Ventilation (Cont.)



Left Front Air Intake

On some coaches an outside air intake vent is located directly forward of accelerator pedal. Vent opening and closing is controlled by vent operating handle.

3. Outside air can also be admitted through two hinged intake vents located in panel above windshield at inside of coach (see illustration below). Each vent can be opened or closed manually.



Windshield Air Intake Vents

ENGINE COOLING SYSTEM

In addition to controlling the operating temperature of the coach engine, the engine cooling system circulates heated water through the coach heating system.

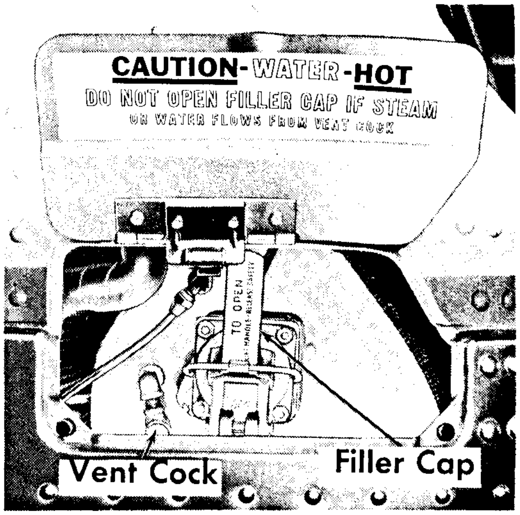
One gate valve in heater supply line, located in compartment at rear of left rear wheelhouse (7, page 27 or 28), can be closed to separate the heating system from the engine cooling system. The gate valve is accessible when compartment door is open. If desired, gate valve can be closed during summer operation to provide operation of ventilating system without heat.

Engine cooling system should be protected with anti-freeze solutions when operating in temperatures below 32°F.

IMPORTANT: If any amount of water is added to system while on a days run during freezing weather, notify proper authorities of action at completion of run.

NOTE: Anti-freeze chart is shown on page 33.

ENGINE COOLING SYSTEM (Cont.)


CAUTION-WATER-HOT
DO NOT OPEN FILLER CAP IF STEAM
OR WATER FLOWS FROM VENT COCK
TO OPEN
Vent Cock
Filler Cap

Surge Tank Filler and Vent

Engine cooling system filler cap and vent cock are accessible through door (6, page 27 or 28) at left corner of coach.

Vent cock is a spring-loaded button type valve, provided as a safety feature to release steam or pressure from the system before the filler cap is opened. Always press the button before opening the filler cap.

As a further precaution, a safety catch on filler cap prevents completely opening the filler cap in one operation.

To open filler cap, pull handle until cap is opened to limit of safety catch. After any existing steam or pressure has escaped, release catch and completely open cap. When filler cap is closed, handle should be pressed down to secure safety catch on cap.

System is full when water is level with bottom of filler cap opening.

Replenishing System

1. Always press vent cock valve button before opening filler cap to check level of water. If water is not level with bottom of filler cap opening, additional water is required.
2. Open radiator filler cap. With engine running, add water until it flows from opening. Close filler cap and latch securely.

CAUTION

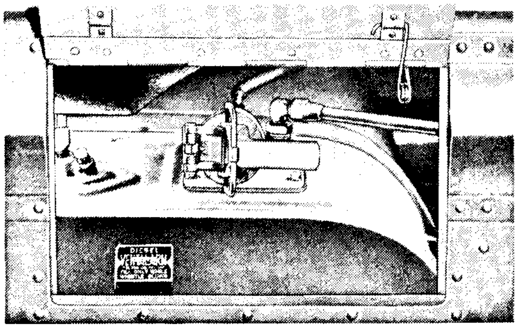
If engine becomes overheated, do not add cold water immediately. Wait until boiling has stopped and engine cooled, then add water slowly with engine running. Serious damage to engine will occur if caution is not observed.

Draining Cooling System

If it is necessary to drain engine cooling system or the heating system, refer operations to your Maintenance Department.

ENGINE FUEL OIL

The engine fuel oil tank filler is accessible through access door (17, page 27 or 28) at right side of coach.

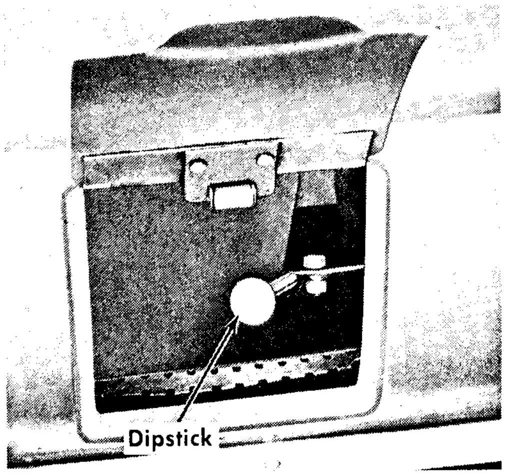


Fuel Tank Filler

Fuel tank is equipped with a "Ventalarm" system. The "Ventalarm" whistle blows while tank is being filled, and stops blowing when tank is filled to amount indicated on decal at door opening. Use only Diesel fuel oil of the correct grade. After filling, close filler cap securely and close access door.

ENGINE CRANKCASE OIL

Engine dipstick is accessible through access door (20, page 27 or 28). Engine compartment door (19, page 27 or 28) must be opened to add oil to crankcase. Oil filler is located at top center of engine valve cover.



Access to Dipstick

Always check crankcase oil level with engine at normal operating temperature. Leave engine stopped for approximately three minutes before checking oil level.

To open access door, lift up at lower edge. Withdraw dipstick and wipe with clean rag. Insert dipstick, then withdraw and note oil level. If down to "LOW" mark, sufficient oil must be added to bring level up to "FULL" mark.

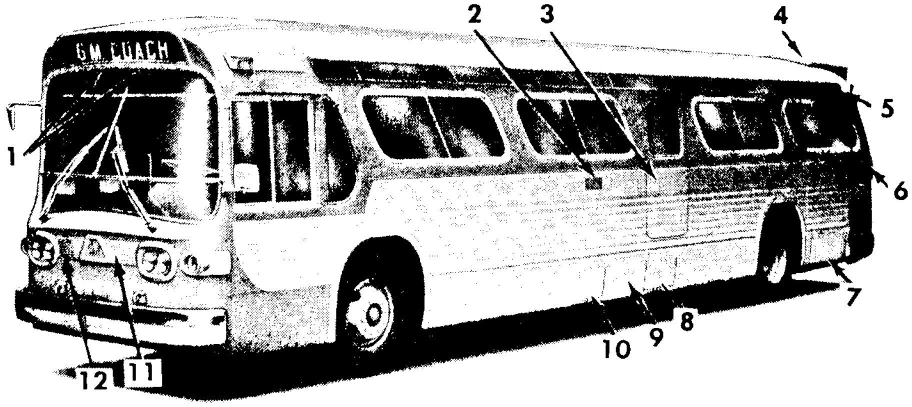
To open engine compartment door, unlock catch at each end. Raise compartment door to fully open position and install prop pins in both telescopic supports. Telescopic supports will hold door in raised position. To close door, lift door and remove support pins; then lower door to closed position. Secure catch at each end of compartment door.

IMPORTANT

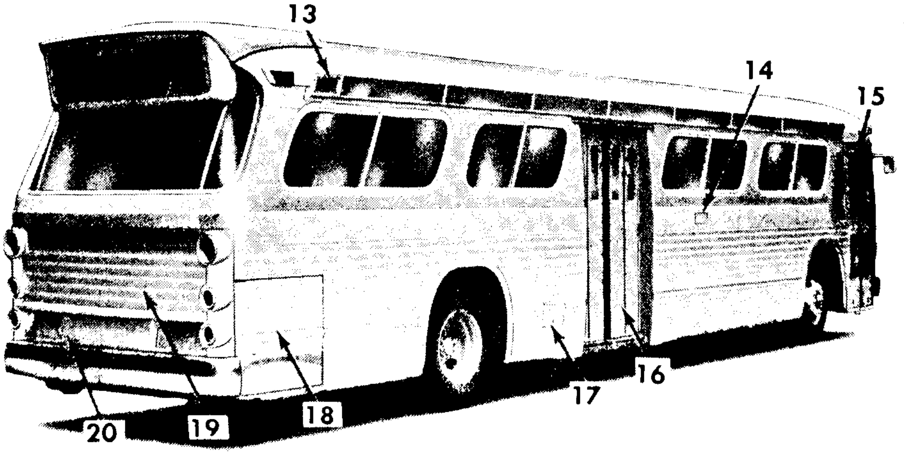
If necessary to add oil to engine crankcase, use heavy duty engine oils designated for service "DG," "DM" or "DS" and classified as MIL-L-2104A type, "Supplement 1," and which meet or exceed the requirements of MIL-L-2104A specification.

EXTERIOR COMPARTMENTS

(Transit Models)



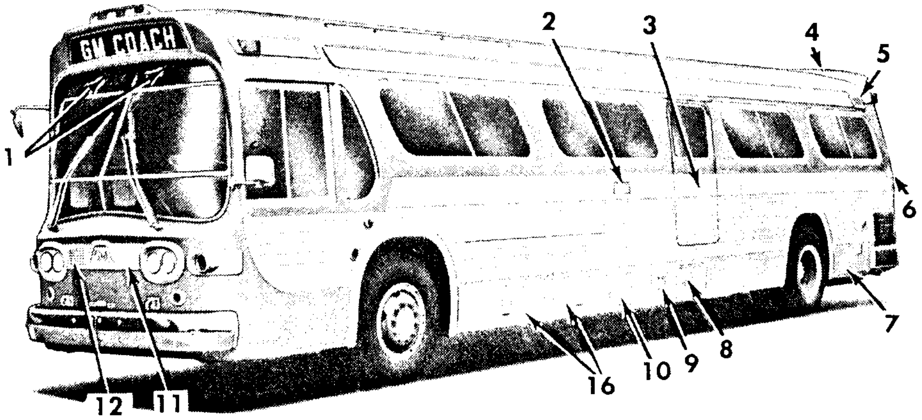
LEFT FRONT VIEW



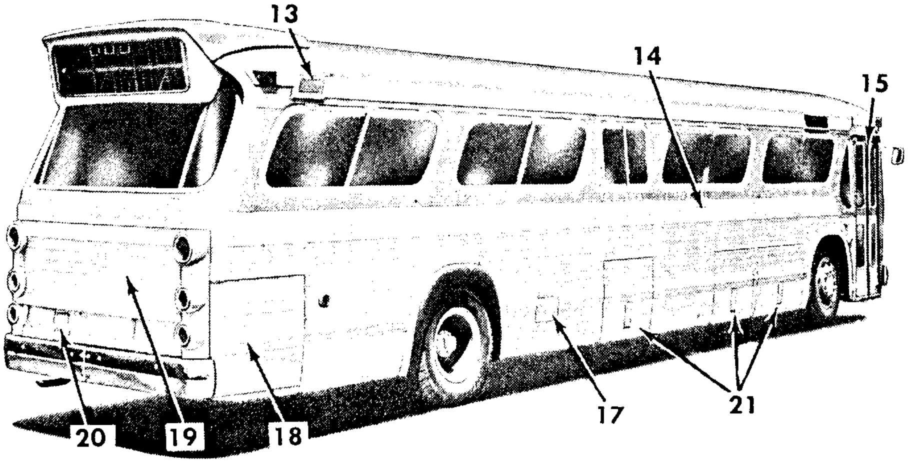
RIGHT REAR VIEW

1. Windshield Air Intake Vents
2. Coach Left Side Air Intake
3. Emergency Door
4. Air Conditioning Condenser Compartment Cover
5. Engine Left Side Air Intake
6. Radiator Filler Door
7. Air Conditioning Compressor Compartment Door
8. Battery Compartment Door
9. Air Conditioning Liquid Receiver Tank Door
10. Air Conditioning Refrigerant Strainer Door
11. Left Front Air Intake
12. Right Front Air Intake
13. Engine Right Side Air Intake
14. Coach Right Side Air Intake
15. Front Door
16. Rear Door
17. Fuel Tank Filler Door
18. Transmission Compartment Door
19. Engine Compartment Door
20. Engine Oil Dipstick Access Door

EXTERIOR COMPARTMENTS
(Suburban Models)



LEFT FRONT VIEW



RIGHT REAR VIEW

1. Windshield Air Intake Vents
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10. Air Conditioning Refrigerant Strainer Door
11. Left Front Air Intake
12. Right Front Air Intake
13. Engine Right Side Air Intake
14. Coach Right Side Air Intake
15. Front Door
16. Left Baggage Compartment Doors
17. Fuel Tank Filler Door
18. Transmission Compartment Door
19. Engine Compartment Door
20. Engine Oil Dipstick Access Door
21. Right Baggage Compartment Doors

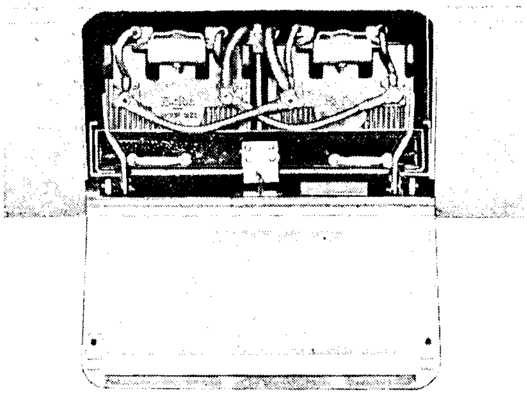
EXTERIOR COMPARTMENTS

Exterior views on page 27 or 28 identify all exterior compartment and access doors. Use of small access doors are explained at various points in the manual. Operator may, if the occasion arises, want access to the battery and transmission components. Method of opening and closing these compartment doors are as follows.

Battery Compartment

Battery compartment (8, page 27 or 28) is located at left side of coach, below the emergency door. Access to compartment is made by unlocking latch at each end of door, then swinging door outward and down.

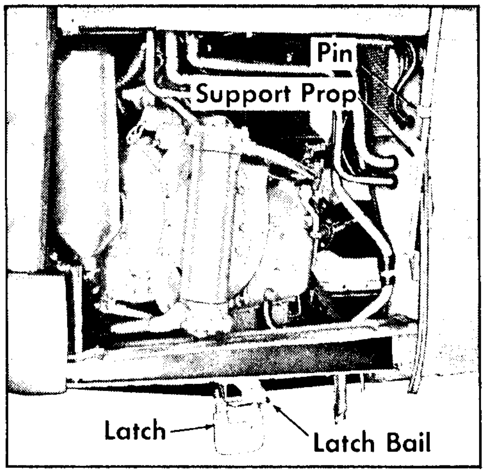
Door latches are operated by either a T-handle key or by key integral with door control lever.



Battery Compartment

Transmission Compartment

Transmission compartment door (18, page 27 or 28) located at right rear corner of coach, is hinged at top and securely closed at bottom by a spring-loaded catch. To open, push down on latch, move latch bail forward and down from safety catch. Raise door and install pin in telescopic prop. To close door, pull pin from support prop, then lower door. Engage bail of latch over catch of door, then pull latch handle forward and up.



Transmission Compartment

Engine Compartment

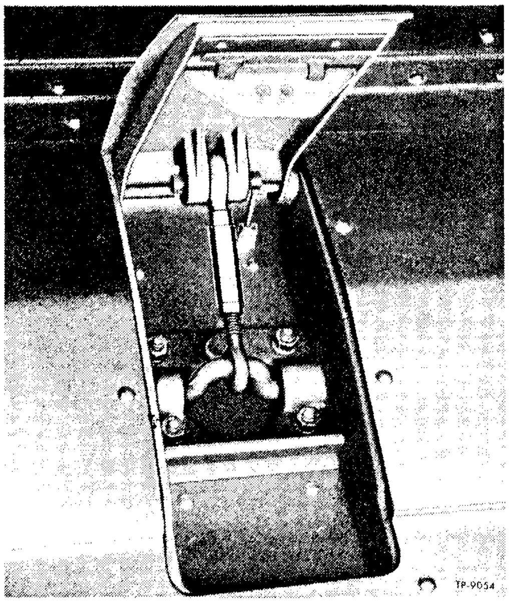
Access to engine compartment is explained under "Engine Crankcase Oil" on page 26.

Other Compartments

Three other compartments are employed on coaches having air conditioning, and are used mostly by service personnel. A refrigerant strainer compartment (10, page 27 or 28), a refrigerant receiver tank compartment (9, page 27 or 28), and the refrigerant condenser compartment (4, page 27 or 28). Compartment (9) is accessible by pulling out and up at bottom of access door. Use key for compartment (10).

Condenser compartment (4) is accessible from rear left side of coach using a self-supporting ladder. Open compartment cover using compartment key.

EXTERIOR COMPARTMENTS (Cont.)



Baggage Door Latch

On suburban models there are two baggage compartment doors on left side (16, page 28) and three on right side (21, page 28). Each baggage compartment door is equipped with a flush-type latch at center of door lower edge.

Insert fingers under latch handle, then pull out and up on handle to unlatch door. Raise door to full-open position and install latch pin. To close, lift door slightly and remove latch pin. DO NOT DROP DOOR TO CLOSED POSITION. To lock door, lift up on door latch, push door closed, then push latch down and inward.

EMERGENCY CONDITIONS

Switches for starting and stopping the engine at the rear are mounted on switch panel at right side of engine compartment. Open engine compartment door (19, page 27 or 28) as directed under "Engine Crankcase Oil" on page 26 for access to switch panel.

Starting Engine at Rear

IMPORTANT: Before attempting to start engine at rear of vehicle, place transmission shift lever in neutral and fully apply hand brake.

1. In operator's compartment, place "MASTER" switch in "DAY" position. After placing switch in operating position on coaches equipped with automatic shutoff system, engine must be started before safety control relay system can act. Refer to "Engine Alarm System" on page 15.

2. At engine compartment control panel, place "ENGINE CONTROL" switch in "REAR RUN" position.

3. Hold "START CONTROL" switch in "REAR START" position to engage starter. Return switch to "OFF" as soon as engine starts. Use the same precautions regarding use of starter as explained under "Starting Engine" at front on page 13.

Be certain that "ENGINE CONTROL" switch is in "OFF" position when working on engine.

EMERGENCY CONDITIONS (Cont.)

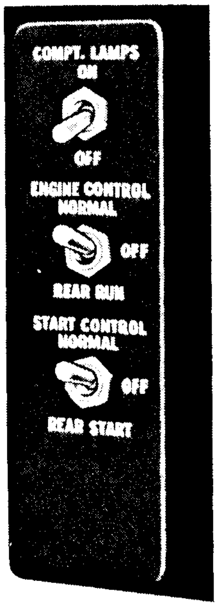
Stopping Engine at Rear

Place "ENGINE CONTROL" switch in "OFF" position. After engine has stopped, return switch to "NORMAL" position. If engine is not to be restarted immediately, place "MASTER" switch in operator's compartment in "OFF" position.

In emergency only, if "ENGINE STOP" switch does not stop engine, push in emergency stop solenoid plunger with fingers to release air choke valve cam. Reset emergency stop after engine has stopped (page 16).

CAUTION

If necessary to work on engine without engine running, place "START CONTROL" switch in "OFF" position. This breaks circuit to starter and prevents accidental starting of engine. After work has been completed, always place "START CONTROL" switch in "NORMAL" position and "ENGINE CONTROL" switch in "NORMAL" position before closing compartment door.



Engine Control Panel

Engine Oil Pressure Low

In the event the engine lubricating oil pressure drops below three pounds during operation, the alarm buzzer will sound and the "LOW OIL" tell-tale will be illuminated. If coach is equipped with automatic engine shut-off system, the safety control relay will stop engine after a time lag of approximately 15 to 20 seconds. Stop the vehicle and turn "MASTER" switch to "OFF" position. Method of checking and replenishing engine crankcase oil is described on page 26. The safety control relay alarm system can be overruled on some coaches as explained under "Engine Alarm System" on page 15.

Generator Not Charging

If "GEN" tell-tale lights, indicating that generator is not charging, turn off all electrical accessories (except necessary lights at night). If necessary to continue driving coach to point of service with generator not charging, leave all electrical accessories except necessary driving lights off.

EMERGENCY CONDITIONS (Cont.)

Engine Overheat

If engine becomes overheated during operation, the alarm buzzer will sound and the "HOT ENG." tell-tale will be illuminated. If coach is equipped with automatic engine shutoff system, the safety control relay will stop engine after a time lag of approximately 15 to 20 seconds. Stop the vehicle and turn "MASTER" switch to "OFF" position. Check for cause of overheating condition. Refer to page 25 for instructions on replenishing water in cooling system. The safety control relay alarm system can be overruled on some coaches as explained under "Engine Alarm System" on page 15.

Circuit Breakers

All circuits in the electrical system are protected by circuit breakers. Most of the circuit breakers are located on the junction panel at left of operator and in the engine compartment apparatus box.

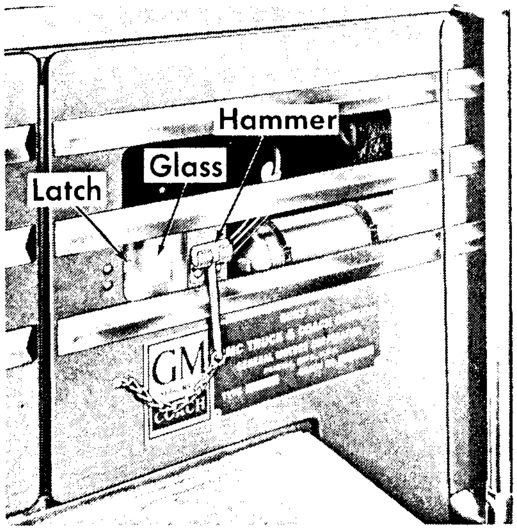
Whenever a short exists in a circuit, action of the circuit breaker opens the circuit. When such a condition exists, the switch controlling the defective circuit should remain off until the cause of the short is located and corrected.

Fuses

In addition to protection by a circuit breaker, the speedometer drive unit is also protected by a fuse (6-amp) located in line near drive unit.

Transmission Oil Pressure Low (SDM and TDM Models Only)

If tell-tale marked "Transmission Low Oil" on gauge panel lights up during operation, it indicates that transmission oil pressure is low. Stop coach, determine cause and correct before proceeding.



Dash Compartment

SAFETY EQUIPMENT

Fire extinguisher and other safety equipment when carried in coach, is located in compartment at right of dash.

Access to extinguisher, on some models, is gained by breaking glass over compartment door latch mechanism, then unlatching door. To close door, push door in until latch is fully engaged.

On other coaches, extinguisher is accessible after turning handle of dash compartment door and opening door.

LIGHT BULB DATA

(All bulbs are Single Contact Unless Otherwise Noted)

Name	Qty.	Candlepower	Trade No.
Headlight Sealed-Beam Unit (Inside-Stamped No. 1)	2	37-5	4001
Headlight Sealed-Beam Unit (Outside-Stamped No. 2)	2	37.5-50W	4002
Instrument Panel Lights	2	2	57
Tell-tale Lights	10	2	57
Rear License Plate Light	1	4	67
Corner Marker Lights	4	6	89
Michigan Marker Lights	6	4	67
Destination Sign Standby Lights	4	15	93
*Emergency Door Light	1	4	68
Door Step Lights	2	21	1141
Taillights	2	4	67
Front Directional Lights	2	21	1141
Stop and Rear Directional Lights	2	21	1141
Engine Compartment Lights	6	21	1141
Driver's Light	1	15	93
Freon Receiver Tank Bulb	1	6	89
Rear Exit Door Light	1	6	89
Dome Lamp (Transit Models)	4	Slimline (Cool-White)	72"-T12
Dome & Destination Sign (Transit Models)	2	Slimline (Cool-White)	48"-T12
Dome and Reading Lights (Suburban Models)	AR	21	1141

**Double Contact*

ANTI-FREEZE CHART

Engine cooling system should be protected with anti-freeze solutions for temperatures below 32°F. Only ethylene-glycol type anti-freeze should be used. The chart below shows quarts of anti-freeze to be used for protection to various temperatures, based on the total capacity of the engine cooling system and the heating system (77 quarts).

Lowest Expected Temp.	Quarts of Ethylene-Glycol
+10°	19¼
0°	25
—10°	28½
—20°	32
—30°	36½

GENERAL DATA

Vehicle Length (Maximum)	
SDH-4501, SDM-4501, TDH-4516, TDM-4516, TDH-4517, TDM-4517	35 ft.
SDH-5301, SDM-5301, TDH-5301, TDM-5301, TDH-5302, TDM-5302	40 ft.
Vehicle Height (Maximum)	
TDH-4516, TDM-4516, TDH-4517, TDM-4517, TDH-5301, TDM-5301, TDH-5302, TDM-5302	118 in.
SDH-4501, SDM-4501	$117\frac{53}{64}$ in.
SDH-5301, SDM-5301	$118\frac{7}{16}$ in.
Vehicle Width (Overall)	
SDH-4501, SDM-4501, TDH-4517, TDM-4517, SDH-5301, SDM-5301, TDH-5302, TDM-5302	95¾ in.
TDH-4516, TDM-4516, TDH-5301, TDM-5301	101¾ in.
Tire Size	
SDH-4501, SDM-4501, TDH-4516, TDM-4516, TDH-4517, TDM-4517	10.00/20
SDH-5301, SDM-5301, TDH-5301, TDM-5301, TDH-5302, TDM-5302	11.00/20
Fuel Tank Capacity	95 gal.
Cooling System Capacity (includes heating system)	77 qt.
Transmission Capacity	
(Transit Models)	*28 qt.
(Suburban Models)	**10½ qt.
Rear Axle Capacity	26 pts.

*When filling or adding oil, fill to "FULL" mark on dipstick.

**When filling or adding oil, fill to "HOT" or "COLD" mark on dipstick.

NOTE: As previously stated, these coaches are equipped with gauges, tell-tale lights, and warning devices which warn the operator of abnormal operating conditions. As indicated by these devices, take the necessary steps to avoid trouble before any serious damage occurs. Get the INSTRUMENT BOARD HABIT — It's a good practice.

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